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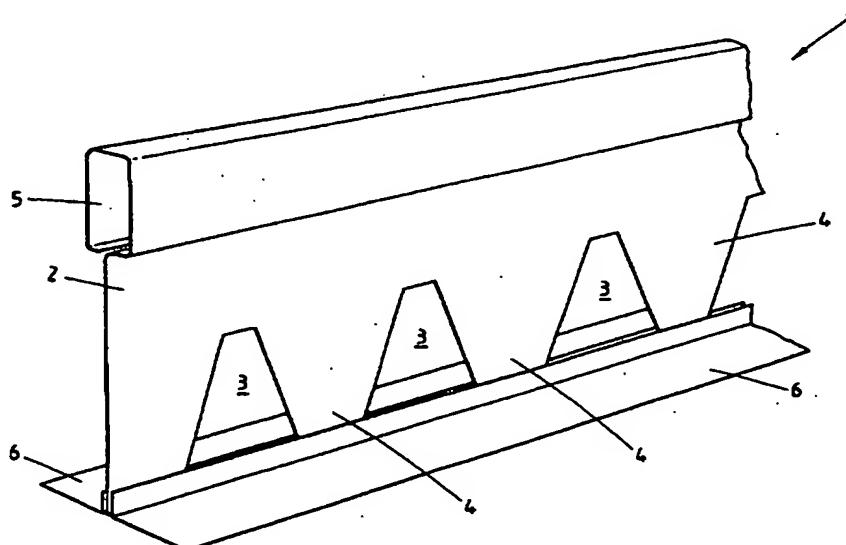
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(54) Title: **METHOD FOR FORMING A SUPPORTING PROFILE FOR CEILING PLATES AND THUS OBTAINED SUPPORTING PROFILES**



(57) Abstract

The invention relates to a method for forming a supporting profile (1) for ceiling plates, characterised in that use is made of a metal tape (2), from which two similar strips originate, by splitting said metal tape in two, in longitudinal direction along a broken cutting line, in such a way that a succession of geometrical figures (3, 4) is formed on both strips and both strips form each other mirror image, and that each strip is provided with wings (6) for supporting the ceiling plates and that finally said continuous profile (1) is mounted on each strip of formed therefrom. The invention also relates to the thus obtained supporting profile.

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"Method for forming a supporting profile for ceiling plates and thus obtained supporting profiles"

This invention relates to a method for forming a supporting profile for ceiling plates or the like, which contains two wings for receiving ceiling plates, a body and a continuous profile for fixing the supporting profile.

It is the aim of the invention to develop a method which allows to provide profiles of the type mentioned above, which have as main characteristic that a substantial saving of material can be obtained, which, in this field, has not been realised up to now, and which in spite of their lower weight, show a sufficient inertion momentum.

To achieve this according to the invention, use is made of a metal tape, from which two similar strips originate, by splitting said metal tape in two in longitudinal direction along a broken cutting line, in such a way that successive geometrical figures are formed on both strips and both strips form each others mirror image, and that each strip is provided with wings for supporting the ceiling plates and that finally said continuous profile is mounted on each strip or formed therefrom.

According to a first embodiment of the invention, said cutting line is drawn in such a way that on each strip an alternation of triangular notches and triangular protrusions is formed.

According to a second embodiment of the invention, said cutting line is drawn in such a way

that on each strip an alternation of rectangular notches which proceed into triangular notches, and rectangular protrusions which proceed into triangular protrusions, is formed.

5 According to a preferred embodiment, said wings for supporting the ceiling plates are formed by cutting said ends of said triangular protrusions, respectively the rectangulars which extend these triangular protrusions, in the middle along their
10 longitudinal plane of symmetry, and by folding the thus formed lips over 90° alternating to the left and to the right, whereafter a finishing strip is applied over said lips.

15 According to a further embodiment, use is made of said two strips originating from one and the same metal tape, whereby the triangular protrusions are folded over 90°, in one direction, near to their top and basis, for forming using parts, whereafter the locally folded strips are placed against each other
20 back to back, and said wing parts with finishing strips, which form the actual wings, are covered.

The invention also relates to the supporting profiles which are obtained according to the different methods.

25 Other details and advantages of the invention will become clear from the following description of a method for forming a supporting profile for ceiling plates and the supporting profiles obtained with this method. This description is only
30 given as an example and is not meant to limit the scope of the invention in any way. The reference numbers relate to the attached figures.

35 Figure 1 is a perspective view of a supporting profile obtained with the method according to the invention.

Figure 2 is a perspective view of a supporting profile according to a first embodiment of the method of the invention.

5 Figure 3 is a perspective view of a supporting profile obtained according to a second embodiment of the method of the invention.

The supporting profile 1 shown in figure 1, is formed by applying the method according to any one of claims 1 or 2. The supporting profile 1 is indeed formed by dividing a metal tape 2 in two in longitudinal direction, along a broken cutting line. In this way, two strips are formed which are characterized by each a success of geometrical figures. Each strip of metal tape can thus be seen as the mirror image of the other strip.

In the embodiment shown in figure 1, said geometrical figures correspond with a series of triangular notches 3 and triangular protrusions 4.

20 The continuous profile 5 with which the supporting profile can be suspended is formed from the metal tape 2, simultaneously with the division of the metal tape in two similar strips. Apparently, the formation of the continuous profile 5 can be performed in a separate step.

25 The wings 6 are connected to the triangular protrusions 4, by using a suitable and generally known method. Ceiling plates and the like can rest on these wings.

30 Figure 2 shows a profile which differs somewhat from the supporting profile described above.

The supporting profile according to figure 2 is also formed by dividing a metal tape 2' in two similar parts. In this metal tape 2', an alternation of rectangular notches 7 which each time proceed into triangular notches 8, is formed.

Between said rectangular notches 7 with their triangularly extended parts, each time, opposite rectangular protrusions 9 are formed, which proceed into triangular protrusions 10 in the direction of
5 their free end.

It is characteristic for this embodiment that each triangular protrusion 10 proceeds into lips 11, which are bent over 90°, alternately to the left and the right with respect to the longitudinal symmetry plane of the supporting profile. The lips are formed by cutting the rectangular or substantially rectangular ends of the triangular protrusions 10 in
10 the middle, along their longitudinal plane of symmetry.

15 A finishing strip is provided over the thus formed lips 11. Ceiling plates and the like can rest on this finishing strip.

Also the supporting profile 12 of figure 3 is formed by dividing a metal tape 1 in two along a cutting line, in such a way that two strips are formed which are characterised by a succession of
20 triangular protrusions 13 and 13'.

One strip consisting of triangular protrusions 13 is placed back to back against a strip with triangular protrusions 13', in such a way that
25 each triangle 13' of one strip fits precisely between two triangular protrusions 13 of another strip.

This arrangement is clearly shown in figure 3. At the top (this is meant to be the top in the using position of the supporting profile), each triangular protrusion 13, 13' is bent outwardly over 90°. These outwardly bent ends 14, respectively 14', can be considered as being wing parts. A finishing strip 15 is attached over these bent borders.
30

At the bottom (to be understood in the using position) the rectangular protrusions 13, 13' are
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bent outwardly over 90°. The outwardly bent bases of the protrusions 13 and 13' are clarified by means reference 16. It should be remarked that between the basis of two successive triangular notches 13, 13', a 5 part 16 which belongs to the original metal tape, connects two successive triangular protrusions. Also, these over 90° outwardly bent ends of the triangular protrusions can be seen as parts of the wings. The wings are covered with a finishing strip 17. The 10 finishing strip 16 is applied according to any method known from the art to be described further.

The invention is not limited to the embodiment described above and a number of variations can be applied, as far as they fall within the scope of 15 the attached claims.

CLAIMS.

1. Method for forming a supporting profile for ceiling plates or the like, which contains two wings for receiving ceiling plates, a body and a continuous profile for fixing the supporting profile, characterised in that use is made of a metal tape, from which two similar strips originate, by splitting said metal tape in two in longitudinal direction along a broken cutting line, in such a way that a succession of geometrical figures is formed on both strips and both strips form each others mirror image, and that each strip is provided with wings for supporting the ceiling plates and that finally said continuous profile is mounted on each strip or formed therefrom.
5
2. Method according to claim 1, characterised in that said cutting line is drawn in such a way that on each strip an alternation of triangular notches and triangular protrusions is formed.
15
3. Method according to claim 1, characterised in that said cutting line is drawn in such a way that on each strip an alternation of rectangular notches which proceed into triangular notches, and rectangular protrusions which proceed into triangular protrusions, is formed.
20
4. Method according to claim 3, characterised in that each triangular protrusion proceeds into a rectangular uitsprong, which is outwardly bent over 90°.
25
5. Method according to any one of claims 1 and 2, characterised in that said wings for supporting the ceiling plates are formed by attaching L-shaped profiles at the ends of said triangular protrusions.
30
6. Method according to any one of
35

claims 1 to 4, characterised in that said wings for supporting the ceiling plates are formed by cutting said ends of said triangular protrusions, respectively the rectangulairs which extend these triangular protrusions, in the middle along their longitudinal plane of symmetry, and by folding the thus formed lips over 90° alternately to the left and the right, whereafter a finishing strip is applied over said lips.

7. Method according to any one of claims 1-6, characterised in that use is made of said two strips originating from one and the same metal tape, whereby the triangular protrusions are folded over 90°, in one direction, near to their top and basis, for forming the wing parts, whereafter the locally folded strips are placed against each other back to back, and said wing parts are covered with finishing strips which form the actual wings.

8. Method according to claim 7, characterised in that said two strips are placed against each other in such a way that a triangular protrusion of one strip fits precisely between two triangular protrusions of the other strip.

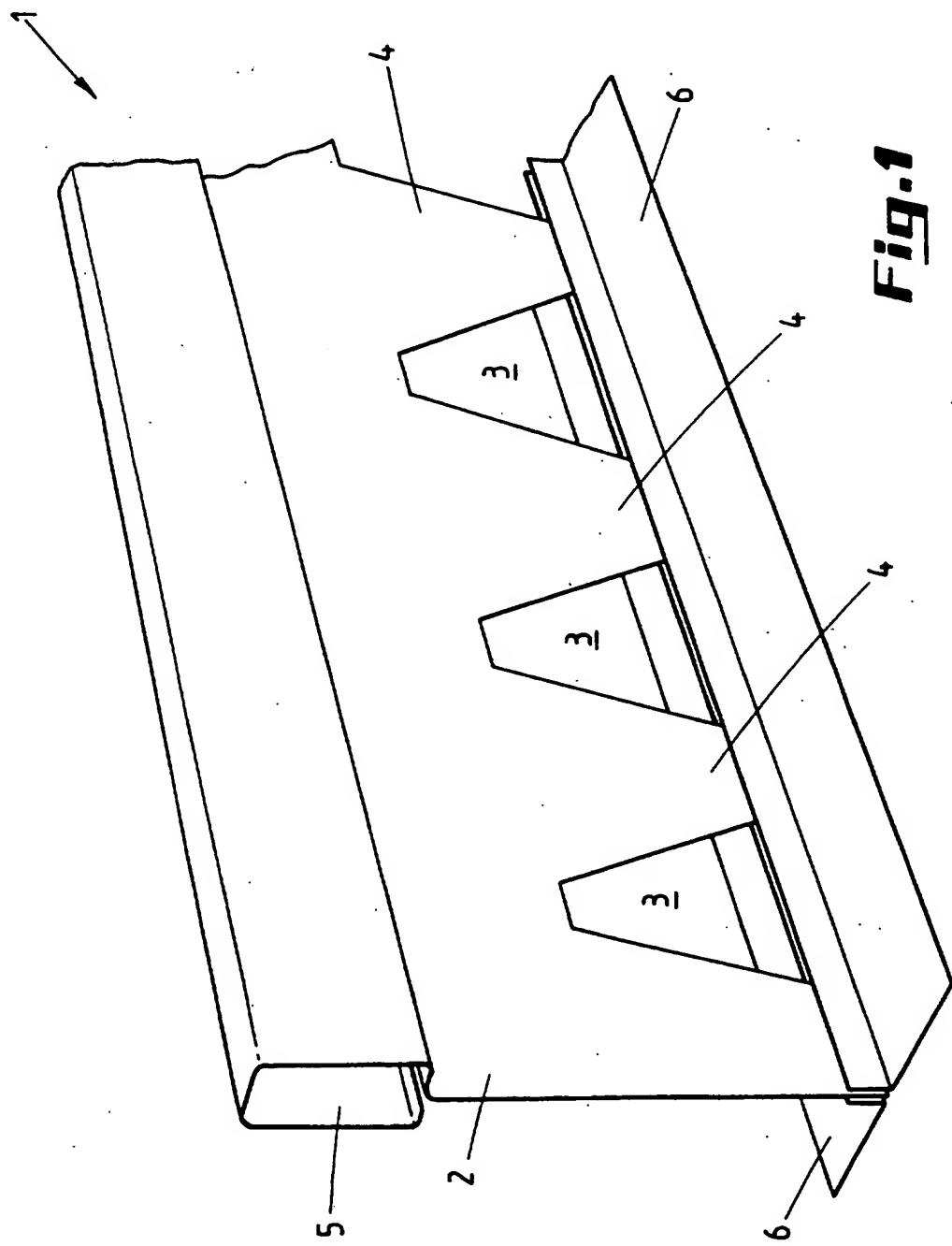
9. Supporting profile for ceiling plates consisting of a body, wings for supporting said ceiling plates and a continuous profile for fixing said supporting profile, characterised in that said body presents triangular notches applied in a metal tape, which metal tape also forms a continuous hollow compartment for suspending the supporting profile, while said wings consist of L-shaped profiles which are attached to said strip.

10. Supporting profile obtained with the method according to any one of claims 1-6, characterised in that said profile consists of a metal tape of which one border is bent for forming a

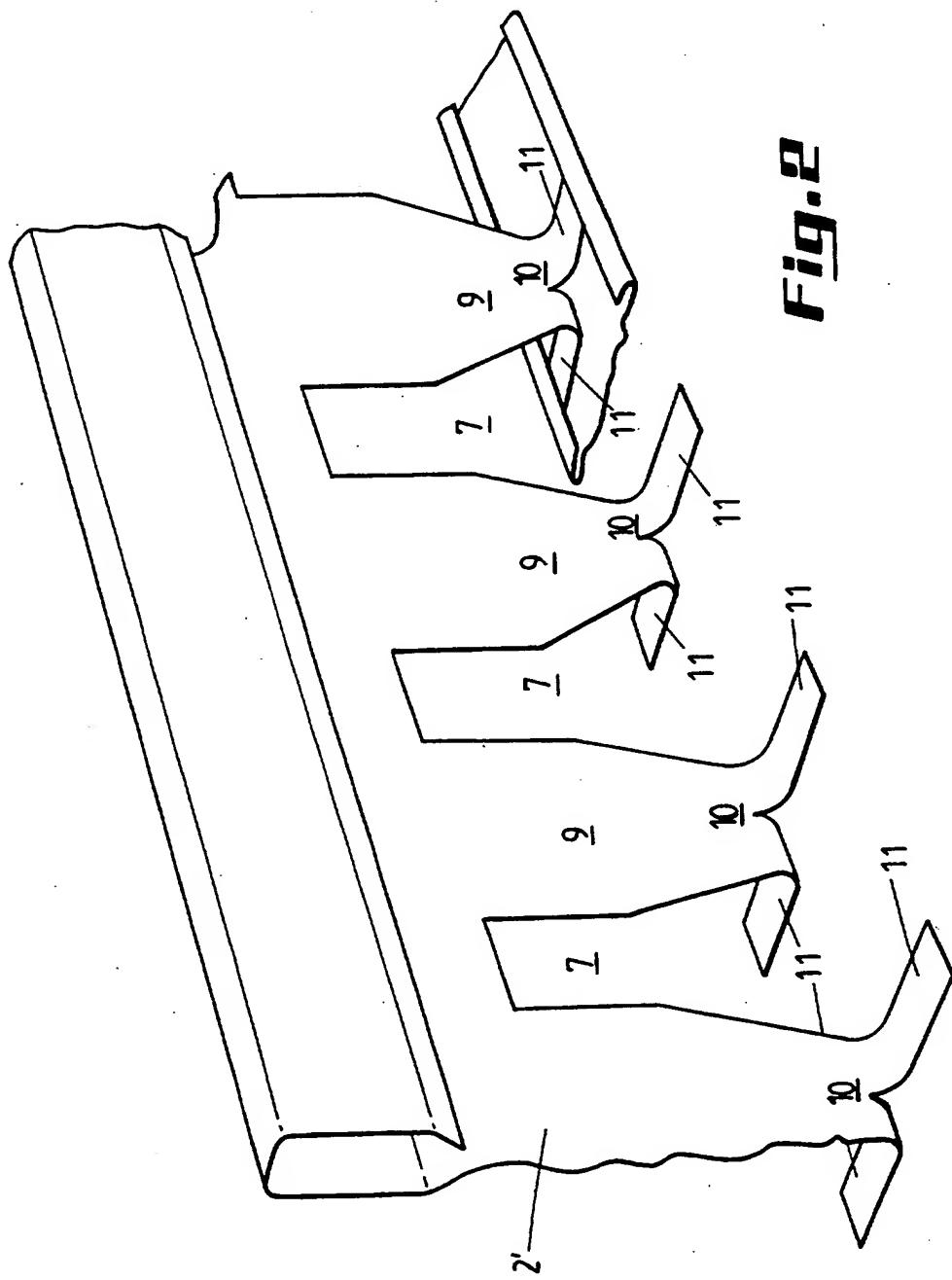
continuous profile for fixing the supporting profile, while the wings of the supporting profile are formed by a finishing strip provided on alternately left and right bent lips which belong to said metal tape.

- 5 11. Supporting profile obtained with the method according to any one of claims 1, 7 and 8, characterised in, that said profile consists of a combination of two back to back placed metal tape strips, of which the triangular protrusions of one
10 strip fit precisely between the triangular protrusions of the other strip and the wings for supporting the ceiling plates as well as the continuous profile for suspending the supporting profiles are formed by covering the bent borders of each strip with a
15 finishing strip.

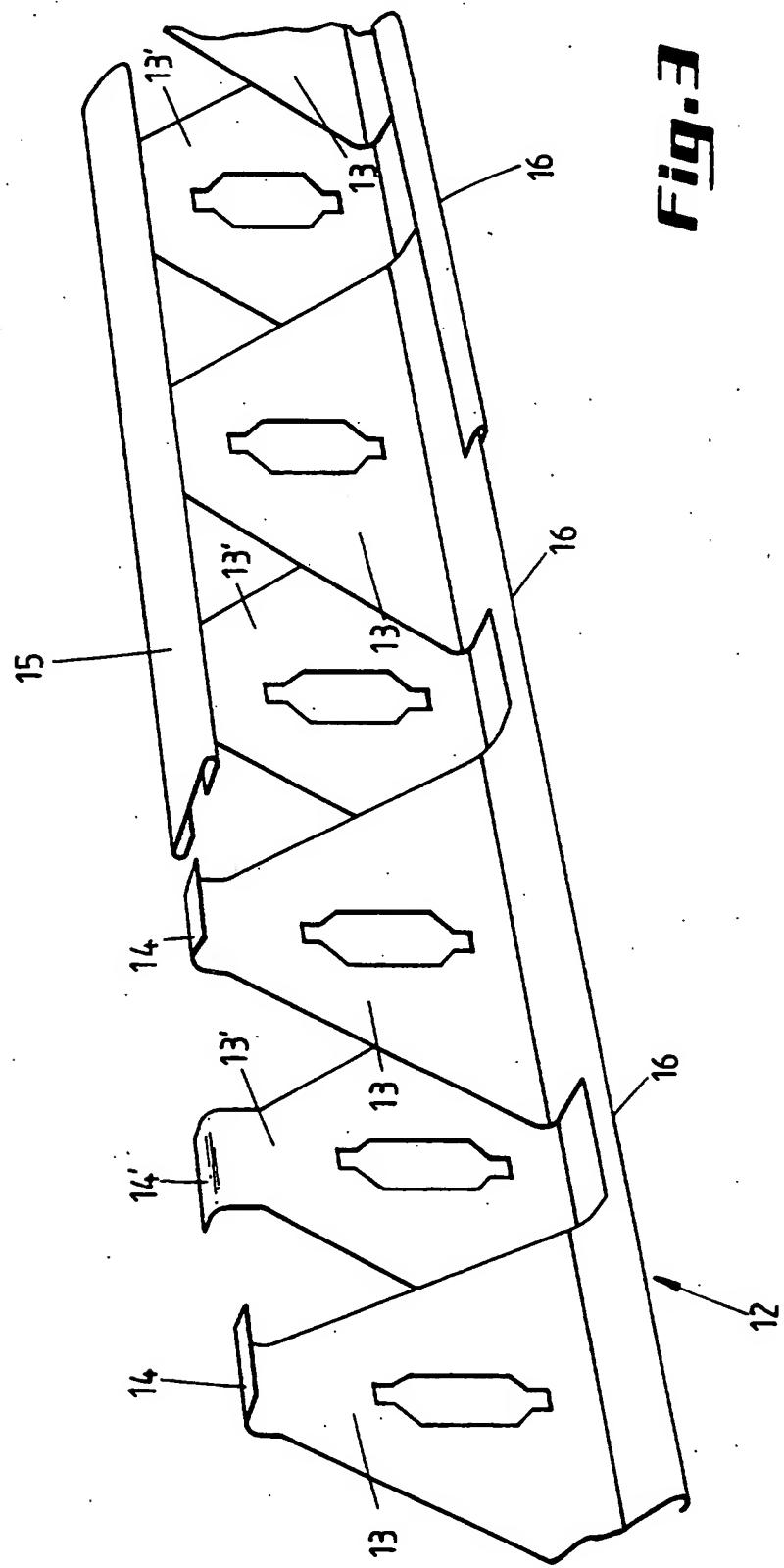
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INTERNATIONAL SEARCH REPORT

Inter national Application No
PCT/BE 96/00095

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 E04B9/06 E04C3/09

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 E04B E04C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE,U,86 07 709 (PAG PRESSWERK) 30 April 1986	1,3,4
A	see the whole document	10
Y	FR,A,2 095 209 (STATION D'ESSAIS ET DE RECHERCHES DE LA CONSTRUCTION MÉTALLIQUE) 11 February 1972	1,3,4
A	see page 3, line 11 - page 3, line 18 see page 5, line 4 - page 5, line 14 see page 5, line 32 - page 5, line 36 see figures 1,2,6,7	8,11
Y	GB,A,504 405 (WEAKLEY) 25 April 1939 see page 2, line 102 - page 2, line 111 see figures 1,2	9 5

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C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB,A,937 440 (THE UNITED STEEL COMPANIES) 18 September 1963	9
A	see page 1, line 56 - page 1, line 62 see figures 1,2 ---	1,9
A	DE,A,24 33 142 (MALIK) 22 January 1976 see page 5, paragraph 3 - page 6, paragraph 2 see page 8, paragraph 5 - page 9, paragraph 2 see figures 1,2,6-8 ---	1,2,7,8, 11
A	NL,A,6 717 384 (POPKEN) 27 January 1969 see page 4, line 22 - page 4, line 35 see figures 4,5 ---	6,10,11
A	GB,A,2 026 586 (DONN PRODUCTS) 6 February 1980 -----	

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
DE-U-8607709	30-04-86	NONE		
FR-A-2095209	11-02-72	BE-A- LU-A-	751951 63284	14-12-70 13-09-71
GB-A-504405		NONE		
GB-A-937440		NONE		
DE-A-2433142	22-01-76	NONE		
NL-A-6717384	27-01-69	BE-A-	708846	16-05-68
GB-A-2026586	06-02-80	US-A- CA-A- DE-A- FR-A- US-E-	4206578 1130972 2930470 2432584 RE31528	10-06-80 07-09-82 21-02-80 29-02-80 06-03-84

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